Mesuca Bott, 1973b:316 [type-species: *Cancer tetragonon* Herbst, 1790, by original designation; gender: feminine].

Latuca Bott, 1973b:317 [type-species: *Mesuca (Latuca) neocultrimana* Bott, 1973, by original designation; gender: feminine].

Tubuca Bott, 1973b:322 [type-species: *Gelasimus urvillei* H. Milne Edwards, 1852, by original designation; gender: feminine].

Austruca Bott, 1973b:322 [type-species: *Gelasimus annulipes* H. Milne Edwards, 1837, by original designation; gender: feminine].

Paraleptuca Bott, 1973b:322 [type-species: *Gelasimus chlorophthalmus* H. Milne Edwards, 1837, by original designation; gender: feminine].

Heteruca Bott, 1973b:323 [type-species: *Gelasimus heteropleurus* Smith, 1870, by original designation and monotypy; gender: feminine].

Planuca Bott, 1973b:324 [type-species: *Uca thayeri* Rathbun, 1900, by original designation; gender: feminine].

Leptuca Bott, 1973b:324 [type-species: *Gelasimus stenodactylus* H. Milne Edwards and Lucas, 1843, by original designation; gender: feminine].

Deltuca Crane, 1975:21 [type-species: *Gelasimus forcipatus* Adams and White, 1848, by original designation; gender: feminine].

Australuca Crane, 1975:62 [type-species: *Gelasimus bellator* Adams and White, 1848, by original designation; gender: feminine].

Thalassuca Crane, 1975:75 [type-species: *Cancer tetragonon* Herbst, 1790, by original designation; gender: feminine].

Amphiuca Crane, 1975:96 [type-species: *Gelasimus chlorophthalmus* H. Milne Edwards, 1837, by original designation; gender: feminine].

Borboruca Crane, 1975:109 [type-species: *Uca thayeri* Rathbun, 1900, by original designation and monotypy; gender: feminine].

Afruca Crane, 1975:116 [type-species: *Gelasimus tangeri* Eydoux, 1835, by original designation and monotypy; gender: feminine].

Celuca Crane, 1975:211 [type-species: *Uca deichmanni* Rathbun, 1935, by original designation; gender: feminine].

REMARKS.—Latreille (1817b:517), when introducing the generic name *Gelasimus*, cited it as "*Gelasimus* (Buffon)." This caused Stebbing (1905:40) to remark: "Latreille at the first institution of *Gelasimus* attributed the genus to Buffon, though in 1820 he claims it as his own. He gave no reference for the name to any part of Buffon's works, and no such reference has since been discovered." Also Crane (1975:20) remarked: "I have been unable to trace the use of the word by Buffon." The solution of this problem may be that Latreille did not intend to refer to Georgè Louis Leclerc, comte de Buffon, but that the word "Buffon" is merely cited as a translation of the latin word "Gelasimus," which means "buffoon," "jester," or "mocker."

* *Uca tangeri* (Eydoux, 1835)

Cancer Uka una, Brasiliensis Seba, 1759:44, pl. 18: fig. 8.

Cancer vocans major Herbst, 1782:83, pl. 1: fig. 11.

Ocypoda heterochelos Lamarck, 1801:150.—Bosc, 1802:197.—Desmarest, 1830:250.

Cancer Uka Shaw and Nodder, 1803, pl. 588.

Uca una Leach, 1814:430.

Gelasimus Tangeri Eydoux, 1835, pl. 17.

Gelasimus perlatus.—Hilgendorf, 1879:806.—De Man, 1879: 66.—Pechüel-Loesche, 1882:288.—Büttikofer, 1890:464, 487.—Aurivillius, 1893:31.—Johnston, 1906:862.

Uca tangeri.—Maccagno, 1928:33, fig. 19.—Frade, 1950:11, 26.—Capart, 1951:180, fig. 69.—Monod, 1956:399, figs. 559, 560.—Dubois, 1957:7, fig. 23.—Rossignol, 1957:86, 119 [key].—Sourie, 1957:14, 50.—Longhurst, 1958:53, 88.—Gauld, 1960:71.—Guinot-Dumortier and Dumortier, 1961:136.—Nicou, 1960:135–156, figs. 1–4.—Guinot and Ribeiro, 1962:67.—Rossignol, 1962:119.—Forest and Guinot, 1966:90.—Monod, 1967:180, pl. 17: fig. 4.—Uschakov, 1970:448, 455, fig. 4.—Bright and Hogue, 1972: 13.—Bott, 1973a:311–314, figs. 1, 3; 1973b:316, fig. 1.—Hartmann-Schröder and Hartmann, 1974:19.—Pauly, 1975:57.—Powell, 1979:127.

Gonoplax speciosus Monod, 1933b:548 [footnote; nomen nudum].

Gelasimus (Uca) tangeri.—Bruce-Chwatt and Fitz-John, 1951: 117 [also *Gelasimus tangeri*, pp. 117 and 119; and *Gelasimus Tangery*, p. 119].

Uca tangeri typique Monod and Nicou, 1959:988, figs. 2, 4, 5.

Uca tangeri matandensis Monod and Nicou, 1959:988, figs. 1, 3, 6.

Uca (Minuca) tangeri.—Bott, 1968:168.

Uca (Afruca) tangeri.—Crane, 1975:118, figs. 27D–F, 37E, 45E–I, 45EE–II, 46F, 63D, 81E, 82F, 99, pl. 18A–D.

SYNONYMS.—*Gelasimus perlatus* Herklots, 1851; *Gelasimus cimatodus* De Rochebrune, 1883.

MATERIAL EXAMINED—*Pillsbury Material:* Nigeria: Sta 1, Lagos harbor, shore, 2♂, 1♀ (W).

Other Material: Morocco: Tangier, H. Milne Edwards, ?type-material, 1♂, 1♀ (dry, L).

Senegal: Dakar, 1887, J. Büttikofer, 1♀ (L). Dakar, 3 May 1882, O. F. Cook, 2♂, 1♀ (W).

Liberia: Grand Cape Mount near Robertsport, 1882, J.

Büttikofer, 4♂, 2♀ (L). Monrovia, Apr 1894, O. F. Cook and G. N. Collins, New York State Colonization Society, 1♂ (W). Rock Spring, Monrovia, Apr 1894, O. F. Cook and G. N. Collins, 1♂ (W). Mouth of Mesurado River, Monrovia; O. F. Cook: 3♂ (W). Tive's farm, Bushrod Island, Monrovia, 16 Nov 1953, G. C. Miller, 2♂ (W).

Ghana: Locality not specified, 1840–1855, H. S. Pel, paralectotypes of *Gelasimus perlatus* Herklots, 4♂ (L). Butre (04°50′N, 01°56′W), 1841–1850, H. S. Pel, types of *Gelasimus perlatus* Herklots, 1♂ lectotype, 3♀ paralectotypes (L; lectotype Crust. D. 262). Elmina, 27 Nov 1889, U. S. Eclipse Expedition, 3♂, 4♀ (W). Accra, 1868–1869, M. Sintenis, 6♂, 4♀ (L).

Nigeria: Lagos, Apr 1964, F. Klüge, 2♂, 1♀ (L). Tarkwa Bay, Lagos, Oct 1957, J. Crane, 29♂, 17♀ (W). S bank of Escravos River near Ajudaibo, Niger delta, 05°34.5′N, 05°11.75′E, 20 Jul 1975, C. B. Powell, 2♂ (L). W of Forcados near confluence of Odimodi Creek and Forcados River, 05°22′N, 05°26′E, 28 Feb 1976, C. B. Powell, 15 specimens (L). Between Brass and Port Harcourt, Niger delta, May–Aug 1960, H. J. G. Beets, 12 specimens (L).

Cabinda: Chinchoxo (= Quinchoxo, = Tschintschotscho, 05°09.24′S, 12°03.75′E) (see Holthuis and Manning, 1970: 250, 251), 1873–1876, J. Falkenstein, don. Mus. Berlin, 1♂ (W). "Quilla Mündung" (= mouth of the Quila River, 05°58′S, 14°47′E), 1873–1876, J. Falkenstein, don. Mus. Berlin, 1♂ (W).

Zaire: Congo, Jan 1895, H. C. Kooiman, 1♀ (L). Banana, mouth of the Congo River, Aug 1915, H. Lang, American Museum Congo Expedition, 10♂, 9♀ (W). Banana, R. I. Meyer, 2♂, 1♀ (L).

Angola: Musserra, 1882, P. Kamerman, 20 specimens (L). Santo Antonio do Zaire, mouth of the Congo River, Aug 1915, H. Lang, American Museum Congo Expedition, 1♂ (W). Luanda (= St. Paul do Loanda), 11 Dec 1889, U. S. Eclipse Expedition, 1♂ (W). Samba, Luanda, Sep 1957, J. Crane, 68♂, 34♀, 33 juv (W). Ilha de Cabo, Luanda, Sep 1957, J. Crane, 94♂, 98♀ (W). Luanda, 18 June 1967, G. Hartmann, 2♂, 1♀ (L). Morro da Cruz, between Luanda and Cuanza, 23 km S of Luanda, 20 Jun 1967, G. Hartmann, 2♂, 1♀ (L). Baía Farta, near Benguela, 3 Jul 1967, G. Hartmann, 1♂, 1♀ (L).

DESCRIPTION.—Crane, 1975:118–124.

Figures: Capart, 1951, fig. 69; Monod, 1956, figs. 559, 560; Bott, 1973a, figs. 1, 3; Crane, 1975, figs. 27D–F, 37E, 45E–I, 45EE–II, 46F, 63D, 81E, 82F, 99, pl. 18A–D.

Male Pleopod: Bott, 1973b, fig. 1 (Zaire); Crane, 1975, fig. 63D (no locality).

MEASUREMENTS.—The examined males have the carapace width between 13 and 42 mm, the females between 12 and 28 mm.

REMARKS.—Bott (1973a) very convincingly showed that the specimen which Seba (1759) showed on his figure 8 of plate 18 as *"Cancer Uka una, Brasiliensis"* belongs to the species that is best known as *Uca tangeri* (Eydoux, 1835), and not to the American species which Rathbun (1918:381) in her monograph of the American grapsoid crabs had indicated with the name *Uca heterochelos* (Lamarck, 1801), Lamarck's species being based on Seba's figure. Holthuis (1959b:277; 1962:239, 240) rejected the specific epithet *heterochelos* Lamarck, 1801, and replaced it by its senior objective synonym *major* Herbst, 1782; he used the name *Uca major* (Herbst) for the American species, accepting Rathbun's interpretation of the identity of *Ocypoda heterochelos* Lamarck, and thus of Seba's specimen. Holthuis (1962:240) selected the specimen figured by Seba (1759, pl. 18: fig. 8) as the lectotype of *Cancer vocans major* Herbst, 1782, *Ocypoda heterochelos* Lamarck, 1801, and *Uca una* Leach, 1814, and thereby made these species objective synonyms of each other. As *Uca una* Leach, 1814, is the type-species (by monotypy) of the genus *Uca* Leach, 1814, the correct name of that type-species becomes *Uca major* (Herbst, 1782).

Bott's (1973a) discovery that the epithets *major* Herbst, 1782, *heterochelos* Lamarck, 1801, and *una* Leach, 1814, do not pertain to the American species (as Rathbun and most later authors thought), but to the European and West African *Uca tangeri* (Eydoux), would cause considerable confusion in the nomenclature of the group, unless action by the International Commission on Zoological Nomenclature prevents this. Bott (1973a) showed that the oldest available name for the American species is *Gelasimus platydactylus* H. Milne Edwards, 1837, and he suggested that henceforth this species be known as *Uca platydactylus* (H. Milne Edwards, 1837). This change in itself would not have been disturbing, as the species is not a very common one and had been known under several names before 1918 when Miss Rathbun's monograph stabilized the use of the name *Uca heterochelos* for it; not until 1959 was the epithet *major* reintroduced for it. However,

the name *Uca major* is now generally used for it and is also adopted in the recent monumental monograph of the genus *Uca* published by Crane (1975:136).

If the change of the name *Uca major* sensu Crane to *Uca platydactylus* (H. Milne Edwards) is somewhat disturbing, this is very much so for the other nomenclatural change that results from Bott's discovery. The species which at present is best known as *Uca tangeri* (Eydoux, 1835) under the strict application of the *International Code of Zoological Nomenclature* should have to be given the name *Uca major* (Herbst, 1782). This species occurs on the extreme southwest coast of the Iberian peninsula and in West Africa as far south as Angola. Since 1835 the epithet *tangeri* (also spelled *tangieri*) has been mostly used for it and since 1900 this usage has been unanimous. *Uca tangeri* is a far better known species than *U. platydactylus,* and, being the only species of *Uca* occurring in Europe, its behavior has been studied by many European zoologists and the ethological literature concerning it is extensive (see Crane, 1975:124, for a listing of this literature). The change of the epithet *tangeri* to *major* would be most undesirable, the more so as the epithet *major* at present is regularly in use for a different species. Also the fact that Crane adopted the epithet *tangeri* in her fundamental monograph, which will be the basis for all taxonomic and ethological studies of *Uca* by generations of biologists to come, is a most important argument for not changing this name. Dr. Bott (1973a:313, 314) was of the opinion that the names *Cancer vocans major* Herbst, *Ocypoda heterochelos* Lamarck, and *Uca una* Leach could be considered "nomina oblita" and should be conveniently ignored. This is not true, however. In the first place, only *Uca una* Leach under the Code before it was revised in 1972 (at the International Congress of Zoology held in Monaco) could qualify as a nomen oblitum, but certainly not the other two names, as those have been repeatedly used in the last 50 years (be it for a species different from *U. tangeri*, which, however, is irrelevant here). Secondly the present revised Code does not allow rejection of so-called "nomina oblita" without a definite action by the International Commission on Zoological Nomenclature.

As far as we can see, there are two ways open to save the use of the name *Uca tangeri* for the present species:

1. To request the International Commission on Zoological Nomenclature to use its plenary powers to suppress the names *Cancer vocans major* Herbst, 1782, *Ocypoda heterochelos* Lamarck, 1801, *Cancer uka* Shaw and Nodder, 1803, and *Uca una* Leach, 1814. This is a complicated procedure and is especially inadvisable as the names are those of the type-species of the genus *Uca* Leach. The results of such an action by the Commission would be that the valid name for the African species would remain *Uca tangeri*, while that of the American species would become *U. platydactylus*. The Commission then also has to decide which of these two species (or any other) should be made the type of the genus *Uca*.

2. To request the International Commission to indicate under their plenary powers a specimen of *Uca platydactylus* (H. Milne Edwards) to be the neotype specimen of *Cancer vocans major* Herbst, 1782. In this way the name *Uca major* (Herbst) would become the valid name for *Uca platydactylus* and the name *Uca tangeri* would become that of the African species. This action would preserve the current usage of both names and legalize the names used by Crane (1975) for the two species. Furthermore, no change in the name of the type-species of the genus *Uca* is then necessary.

The second of these two actions seems to us to be preferable, and an application has been submitted on these lines to the International Commission on Zoological Nomenclature. In it the Commission is requested to use its plenary powers to validate the selection of the type-specimen of *Uca platydactylus* (H. Milne Edwards) to be the neotype of *Cancer vocans major* Herbst, 1782. This specimen, a full grown male from Cayenne, now forms part of the collection of the Muséum national d'Histoire naturelle in Paris (see Crane, 1975:601). In case H. Milne Edwards' (1837) original material of *Gelasimus platydactylus* consisted of more than one specimen, the type-spec-

imen examined by Crane (1975) is made the lectotype of that species. Of all the specimens of *Uca platydactylus* known at present, the neotype of *Cancer vocans major* Herbst originates from a locality (Cayenne) that is closest to the originally indicated type-locality of Herbst's species, viz. Brazil. By this neotype selection *Cancer vocans major* Herbst, 1782, *Ocypoda heterochelos* Lamarck, 1801, *Cancer uka* Shaw and Nodder, 1803, *Uca una* Leach, 1814, and *Gelasimus platydactylus* H. Milne Edwards, 1837, become objective synonyms.

Bott's (1973a) discovery that Seba's specimen is identical with *Uca tangeri* also has consequences for the nomenclature of the subgenera of *Uca*. In 1968 Bott placed *Uca tangeri* in the subgenus *Minuca* Bott, 1954, but in 1973 he (Bott, 1973b: 316) split the old genus *Uca* into 10 genera (7 new), one of which consisted of 2 subgenera (both new). The genus *Uca* was restricted to two species: *Uca tangeri* (Eydoux, 1835) and *Uca marionis* (Desmarest, 1825) [= *Uca vocans* (Linnaeus, 1758)]. In Crane's (1975) monograph of *Uca*, all the fiddler crabs were still placed in a single genus, *Uca*, within which Crane recognized 9 subgenera (7 of which were given new names by her). *Uca tangeri* was placed by itself in a monotypic subgenus *Afruca* Crane, 1975. The limits of Crane's subgenera in many instances do not coincide at all with those of Bott's genera and subgenera. It furthermore is most unfortunate that Bott's (1973b) preliminary paper was published before Crane's (1975) monograph, the manuscript of which was in press too early to take either Bott's system into consideration or to adopt his new names. Bott's final revision of the genus *Uca* sensu lato was never published, as he died in 1974 before finishing it. We have now the most unpleasant situation that Crane's subgenera are well defined and exhaustively treated in an ideal way, while Bott's names, published in a short, not too well-documented paper, have priority. Von Hagen (1976:223), in his review of Crane's monograph, has already pointed to this unfortunate nomenclatural situation and stated:

> Because of their being objective synonyms Crane's names *Thalassuca, Amphiuca* and *Borboruca* must be replaced by Bott's *Mesuca, Paralepluca* and *Planuca*, respectively. When accepting Crane's limits of species groups, one has also to use *Tubuca* Bott instead of *Deltuca* Crane and should use *Leptuca* (not *Austruca*) Bott instead of *Celuca* Crane. Only *Australuca* Crane and (provided the shift of the type species name in consequence of Bott, 1973a, is avoidable) *Afruca* Crane remain valid.
>
> Unfortunately, in practice (though not in theory) a chaos of names seems inevitable. Many non-taxonomists, taking Crane's monograph as the sound reference work that it actually is, will unsuspiciously use her new but invalid subgeneric names, while taxonomists would, of course, have to use Bott's names (regardless, whether on a subgeneric or generic level).

If the *International Code of Zoological Nomenclature* is strictly applied, the name of the present species would be *Uca (Uca) major* (Herbst, 1782); if Bott's system is followed it should be named *Uca tangeri* (Eydoux, 1835); and under Crane's system it is *Uca (Afruca) tangeri* (Eydoux, 1835). Pending the decision of the International Commission on Zoological Nomenclature on this case, the well known name *Uca tangeri* (Eydoux) is used here. We also follow Von Hagen's (1976) suggestion not to use subgeneric names for the time being.

Another change, in both Crane's (1975) and Bott's (1973b) nomenclature is needed. If Crane's system is adopted, then the name *Thalassuca* Crane, 1975, should not be replaced by *Mesuca* Bott, 1973, as Von Hagen (1976) thought, but by *Gelasimus* Latreille, 1817, because the type-species of *Gelasimus, Cancer vocans* Linnaeus, 1758, belongs in Crane's *Thalassuca* (see Crane, 1975:20). Under Bott's classification *Gelasimus* Latreille, 1817, must fall as a junior synonym of *Uca* Leach, 1814, and for the genus that Bott (1973b:323) indicated with the name *Gelasimus*, the generic name *Acanthoplax* H. Milne Edwards, 1852, would become available.

DISTRIBUTION.—The species is found in the eastern Atlantic, its range extending from the south coast of Portugal to southern Angola; it does not occur in the Mediterranean. The records from America (West Indies, Brazil; cf. Rathbun, 1918:388 and Bott, 1973a) in all likelihood are erroneous, due to incorrect labeling. Monod (1956) enumerated the localities from which the

species was then known. Since that time it has been reported from the following West African localities (including those overlooked by Monod; Crane's (1975) records are not duplicated here):

Senegal: Saloum (Sourie, 1957). Ngor, near Dakar (Nicou, 1960).

Guinea-Bissau: Bissau (Maccagno, 1928; Frade, 1950).

Guinea: Île Marara, mouth of Rio Pongo (Uschakov, 1970). Boulbinet, Tanéné, and Ralompa, all near Conakry (Monod and Nicou, 1959).

Liberia: No specific locality (Hilgendorf, 1879; Büttikofer, 1890; Johnston, 1906).

Sierra Leone: Robene Point and Cline Bay (as Kline) (Longhurst, 1958).

Ivory Coast: Lagoon of Abidjan, 05°16′12″N, 04°00′-20″W (Forest and Guinot, 1966).

Ghana: "Coast of Guinea" (De Man, 1879). Estuaries of Volta and Ankobra rivers (Gauld, 1960). Sakumo Lagoon (Pauly, 1975).

Nigeria: Lagos (Bruce-Chwatt and Fitz-John, 1951). Elechi Creek, Port Harcourt, 04°47′15″N, 06°58′45″E (Powell, 1979).

Cameroon: No specific locality (Aurivillius, 1893). Douala (Monod and Nicou, 1959).

Principe: No specific locality (Maccagno, 1928; Forest and Guinot, 1966). Praia Ponta da Mina and Santo António (Forest and Guinot, 1966).

São Tomé: No specific locality (Maccagno, 1928; Forest and Guinot, 1966).

Congo: No specific locality (Maccagno, 1928). Loango (Pechüel-Loesche, 1882; Rossignol, 1957). Mouth of Songololo River (Rossignol, 1957, 1962). Djeno (Rossignol, 1957).

Cabinda: Chinchoxo (Hilgendorf, 1879).

Zaire: Banana (Dubois, 1957; Bott, 1973a,b).

Angola: Luanda (Hilgendorf, 1879; Bott, 1968). Baía de Luanda, Lobito; Baía Farta, Benguela; and Baía dos Tigres (Guinot and Ribeiro, 1962). Between Cacuaco and Lobito-Benguela (Hartmann-Schröder and Hartmann, 1974).

Family GRAPSIDAE MacLeay, 1838

GRAPSIDAE MacLeay, 1838:63, 65.

SESARMINAE Dana, 1851c:288.

PLAGUSINAE Dana, 1851c:288 [corrected to Plagusiinae by Miers, 1878:147; name 377 on *Official List*].

VARUNACEA H. Milne Edwards, 1853:175 [corrected to Varuninae by Alcock, 1900:288, 400].

CYCLOGRAPSACEA H. Milne Edwards, 1853:191.

EASTERN ATLANTIC GENERA.—Thirteen, 12 of which are represented by species occurring from localities between Mauritania and Angola. The other genus is: *Eriocheir* de Haan (1835:32), type-species: *Grapsus (Eriocheir) japonicus* de Haan, 1835, by selection by H. Milne Edwards (1854: 146); gender: masculine.

EASTERN ATLANTIC SPECIES.—Twenty-five, 19 of which occur in tropical waters (the included Atlantic species of *Brachynotus* is not known to occur south of Mauritania so is not strictly tropical). The other species are as follows:

Brachynotus foresti Zariquiey Alvarez, 1968. Mediterranean; littoral (Zariquiey Alvarez, 1968; Froglia and Manning, 1978).

Brachynotus gemmellari (Rizza, 1839). Mediterranean; sublittoral (Froglia and Manning, 1978).

Brachynotus sexdentatus (Risso, 1827). Mediterranean; introduced into Great Britain in artificially heated water at Swansea; northern part of Suez Canal and Black Sea (Zariquiey Alvarez, 1968; Froglia and Manning, 1978).

Eriocheir sinensis H. Milne Edwards, 1853. A native of China, introduced into NW Europe and now reported from Finland, Sweden, and Norway to England and the Atlantic coast of France, in rivers (Christiansen, 1969); and from Lake Erie, North America (Nepszy and Leach, 1973).

Pachygrapsus marmoratus (Fabricius, 1787). Mediterranean and Atlantic coast of Europe from Brittany (France) southward to Morocco, including Madeira, the Azores, and the Canary Islands; intertidal (Zariquiey Alvarez, 1968).

Pachygrapsus maurus (Lucas, 1846). Western Mediterranean, Madeira, the Azores and the Canary Islands; intertidal (Zariquiey Alvarez, 1968).

Four species of Grapsidae at one time or another reported from West Africa in all probability do not belong to the West African fauna, and the material on which these records are based either is incorrectly identified or is labeled with a wrong locality. These species are as follows:

Metopograpsus messor (Forskål, 1775). A species known with certainty from the Red Sea, the east coast of Africa, Madagascar and the Persian Gulf (Holthuis, 1977a). Monod (1956:422, 423) listed the records of this species from West Africa and indicated that most probably they were based on incorrect identifications. There was, however, a

correctly identified specimen of *Metopograpsus messor* in the collection of the Muséum national d'Histoire naturelle, Paris, labeled "Gabon," the correctness of which was doubted by Monod as this same lot included a specimen of another species, *Pseudograpsus elongatus* (see below), which also occurs only in the Indo-West Pacific region.

Platychirograpsus spectabilis De Man, 1896. This species was originally described by De Man (1896:292, fig. 1) from Gabon. Apart from the types of this very characteristic species, no material has ever been reported from West Africa, whereas it has been found repeatedly in fresh water on the E coast of Mexico and also has been introduced into Florida (Marchand, 1946:93–100). As pointed out by Monod (1956:426–428) there is a definite possibility that De Man's material did not originate from West Africa but from Mexico.

Pseudograpsus elongatus (A. Milne Edwards, 1873). A well known species from the Indo-West Pacific (Red Sea, E Africa, Madagascar, the Seychelles, and New Caledonia) (Holthuis, 1977a), but not known from West Africa other than from the specimen labeled as originating from Gabon and found together with *Metopograpsus messor* (see above).

Sesarma roberti H. Milne Edwards, 1853. Originally described from Gorée, Senegal, but otherwise only reported from the West Indies and the Atlantic coasts of Central and South America. As stated by Monod (1956:443) and Chace and Hobbs (1969:184), the type-locality indication is very likely erroneous, so that this species, as well as *Metopograpsus messor, Pseudograpsus elongatus,* and *Platychirograpsus spectabilis*, had best be removed from the list of the West African Brachyura.

Other than the subgeneric names of the West African *Sesarma* , our resurrection of *Goniopsis pelii* from the synonymy of *Goniopsis cruentata*, and our use of *Metagrapsus* instead of *Sarmatium* for *S. curvatum*, the grapsid names used by Monod (1956) have not changed so we have not listed them separately for this family.

Subfamily GRAPSINAE MacLeay, 1838

Genus *Geograpsus* Stimpson, 1858

Geograpsus Stimpson, 1858b:101 [p. 47 on separate] [type-species: *Grapsus lividus* H. Milne Edwards, 1837, by subsequent designation by Rathbun, 1918:231; gender: masculine].

Orthograpsus Kingsley, 1880a:188, 194 [type-species: *Orthograpsus hillii* Kingsley, 1880, a subjective junior synonym of *Grapsus lividus* H. Milne Edwards, 1837, by present selection; gender: masculine].

**Geograpsus lividus* (H. Milne Edwards, 1837)

Geograpsus lividus.—Monod, 1956:410, figs. 562, 563.—Dubois, 1957:7.—Guinot and Ribeiro, 1962:69.—Ribeiro, 1964:15.—Forest and Guinot, 1966:91.

SYNONYMS.—*Grapsus brevipes* H. Milne Edwards, 1853; *Orthograpsus hillii* Kingsley, 1880.

MATERIAL EXAMINED.—*Pillsbury Material*: Nigeria: Sta 1, Lagos harbor, shore, 2♀ (L).

Other Material: Zaire: Banana, mouth of the Congo River, Aug 1915, H. Lang, American Museum Congo Expedition, 2♂, 2♀ (W).

Angola: Lobito, P. Kamerman, 1♀ (L).

DESCRIPTION.—Rathbun, 1921:442; Chace and Hobbs, 1969:157.

Figures: Rathbun, 1921, pl. 15: fig. 1, pl. 22: figs. 2, 3; Monod, 1956, figs. 562, 563; Chace and Hobbs, 1969, fig. 48.

Male Pleopod: Monod, 1956, fig. 563 (Senegal); Chace and Hobbs, 1969, fig. 52a–c (West Indies).

MEASUREMENTS.—The females collected by the *Pillsbury* have the carapace width 12 and 13 mm.

DISTRIBUTION.—The species inhabits the tropical Atlantic, and has also been reported from the eastern Pacific. In the Indo-West Pacific area it is represented by the closely related *Geograpsus stormi* De Man. In West Africa the species is known from the Cape Verde Islands and Senegal to Angola and São Tomé. Monod (1956) listed all West African records known to him, to which now the following can be added:

Cape Verde Islands: Baía das Gatas, São Vicente (Guinot and Ribeiro, 1962; Ribeiro, 1964). São Tiago (Forest and Guinot, 1966).

Fernando Poo: No specific locality (Forest and Guinot, 1966).

Annobon: No specific locality (Forest and Guinot, 1966).

Zaire: No specific locality (as Belgian Congo) (Dubois, 1957).

Angola: Baía Farta, Benguela; Baía da Caota, Benguela; Baía de Santa Maria; and Praia Amélia, Moçâmedes (all Guinot and Ribeiro, 1962).

Genus *Goniopsis* de Haan, 1833

Goniopsis de Haan, 1833:5 [genus established without included nominal species; the first nominal species to be assigned to the genus, by de Haan (1835:33), are *Cancer strigosus* Herbst, 1799, *Grapsus pictus* Latreille, 1803, and *Grapsus cruentatus* Latreille, 1803; type-species: *Grapsus cruentatus* Latreille, 1803, by selection by Rathbun, 1918: 236; gender: feminine].

**Goniopsis pelii* (Herklots, 1851)

FIGURE 59

Grapsus (Grapsus) Pelii Herklots, 1851:8, 23, pl. 1: figs. 6, 7.

Grapsus (Grapsus) simplex Herklots, 1851:9, 23, pl. 1: fig. 8.

Grapsus (Goniopsis) cruentatus.—Von Martens, 1872:105, 106 [not *Grapsus cruentatus* Latreille, 1803].

Grapsus Pelii.—De Man, 1879:68; 1900, pl. 2: fig. 6 [*Peli* on pp. 43–46, 64].

Grapsus simplex.—De Man, 1879:68.—Miers, 1886:255.—De Man, 1900:43, pl. 2: fig. 7.

Goniopsis cruentatus.—Kingsley, 1880a:190.—Studer, 1882: 333 [listed].—Büttikofer, 1890:487.—Thallwitz, 1891: 52.—Benedict, 1893:538.—Doflein, 1900:142.—Johnston, 1906:862.—Vilela, 1949:63.—Frade, 1950:11, 26 [not *Grapsus cruentatus* Latreille, 1803].

Grapsus pelli.—Kingsley, 1880a:190 [in synonymy].

Pachygrapsus simplex.—Kingsley, 1880a:201.

Goniograpsus cruentatus.—Osorio, 1887:227; 1888:191; 1889: 130, 134, 139; 1890:46; 1892:199; 1895a:54; 1895b:57, 58; 1898:193 [not *Grapsus cruentatus* Latreille, 1803].

Grapsus Peli.—De Man, 1900:43, 64, pl. 2: fig. 6 [*Pelii* on plate].

Goniopsis cruentata.—Rathbun, 1900a:278.—Nobili, 1906b: 311.—Rathbun, 1918:237; 1921:443, pl. 39.—Balss, 1922: 80.—Monod, 1927:620; 1928:124.—Irvine, 1947:292, fig. 197.—Bruce-Chwatt and Fitz-John, 1951:117.—Capart, 1951:183, fig. 7.—Sourie, 1954a:84, 112, 293, 297, 306.—Monod, 1956:412, figs. 564–567.—Rossignol, 1957:89, 121.—Longhurst, 1958:88.—Gauld, 1960:71.—Rossignol, 1962:119.—Forest and Guinot, 1966:91.—Uschakov, 1970:443, 455 [listed].—Pauly, 1975:57. [Not *Grapsus cruentatus* Latreille, 1803.]

Gonopsis cruentatus.—J. Roux, 1927:237 [not *Grapsus cruentatus* Latreille, 1803].

Goniopsis cruenta.—Hartmann-Schröder and Hartmann, 1974:19 [erroneous spelling].

Goniopsis pelii.—Powell, 1979:127.

Not *Goniograpsus cruentatus.*—Osorio, 1892:199 [=*Grapsus grapsus* (Linnaeus), see Forest and Guinot, 1966:90].

Not *Pachygrapsus simplex.*—Doflein, 1904:129.—Lenz, 1910: 125.—Lenz and Strunck, 1914:283 [= *P. gracilis* (Saussure), see Balss, 1922:81].

MATERIAL EXAMINED.—*Pillsbury Material*: Nigeria: Sta 1, Lagos harbor, shore, 2 ♂, 4 ♀ (1 ov) (L). Sta 227, Lagos harbor, shore, 2 ♀ (W).

Other Material: Senegal: Dakar, 3 May 1892, O. F. Cook, 1 ♂ (W).

Liberia: No specific locality, 1882, J. Büttikofer, 1♂, 1♀ ov (L). Mouth of Mesurado River, Monrovia, O. F. Cook, 1♀ (W). Rock Spring, Monrovia, Apr 1894, O. F. Cook and G. N. Collins, 5♂ (W). Monrovia, Mar 1895, O. F. Cook, 2♂ (W). Harbel, mouth of Junk River, mangrove bank, dug from under roots, 20 Jul 1968, T. C. Rutherford, 6♂, 4♀ ov (W). St. John River at Upper Buchanan, on mud, in mangroves, at night, 24 Aug 1967, T. C. Rutherford, 2♂, 3♀ (1 ov) (W).

Ghana: Butre (04°49′N, 01°55′W), 1840–1851, H. S. Pel, 1♂ lectotype of *Grapsus Pelii* Herklots (L, Crust. D.68), 3♂ and 5♀ paralectotypes of *Grapsus Pelii* Herklots (L, Crust. D.69), 1 juvenile ♂ lectotype of *Grapsus simplex* Herklots (L, Crust. D.90), 1 juvenile ♀ paralectotype of *Grapsus simplex* Herklots (L, Crust. D.427). Baya River, Elmina, 27 Nov 1889, W. H. Brown, U. S. Eclipse Expedition, 4♂, 2♀ (W). Accra, 1868, 1869, M. Sintenis, 3♂, 3♀ (L).

Nigeria: Mangrove (*Avicennia*) creek behind the Madagho-Ajudaibo road, S shore of the mouth of the Escravos River, Niger delta, 05°35′N, 05°12.5′E, 31 Jul 1975, C. B. Powell, 2♂ (L). West side of the town of Forcados, near the confluence of Odimodi Creek and Forcados River, 05°22′N, 05°-26′E, 28 Feb 1976, C. B. Powell, numerous males and females (L). Niger delta between Brass and Port Harcourt, May–Aug 1960, H. J. G. Beets, 2♂, 2♀ (L).

Cameroon: Small creek about 3 km S of Kribi, among mangrove roots, in burrow, 1964, B. de Wilde-Duyfjes, 1♀ ov (L).

Zaire: Banana, mouth of Congo River, Jul 1915, H. Lang, American Museum Congo Expedition, 4♂, 4♀ (3 ov) (W).

DESCRIPTION.—Capart, 1951:183.

Male Pleopod: Monod, 1956, figs. 565–567 (Senegal). In a denuded condition the gonopods of this species are very similar to those of *Goniopsis cruentata* (see Chace and Hobbs, 1969, fig. 52d–f) and *G. pulchra* (see Abele, 1971, pl. 1).

MEASUREMENTS.—The carapace width of our

specimens varied from 16 to 49 mm. There is no obvious size difference in males and females. Ovigerous females have carapace widths between 25 and 47 mm. The male lectotype of *G. pelii* has a carapace width of 48 mm, the male lectotype of *G. simplex* one of 20 mm.

REMARKS.—A comparison of the present West African material with specimens of *Goniopsis cruentata* from the north coast of South America and the Caribbean shows some differences, which, although small, seem to be constant and induce us to distinguish the two populations as distinct species. A closer study based on much more material and taking also the West American *G. pulchra* into account may establish that the three should be considered subspecies of a single species.

Goniopsis pelii differs from *G. cruentata* in the following points.

1. The front is relatively shorter and wider. The anterior margin of the front not only is emarginate in the middle, but in the middle of each half as well; this secondary emargination is less distinct in *G. cruentata*. The surface of the front bears coarse tubercles, some of which, near the anterior margin, form more or less distinct transverse ridge-like rows; in *G. cruentata* such transverse ridges, if present, are usually short and inconspicuous. This latter character, which was already described by Von Martens (1872), however, is not very constant.

2. The pereiopods in *G. pelii* have the propodi more slender than in *G. cruentata*, and the dactyli are more robust. In *G. pelii* the length of the dactylus of the last pereiopod (Figure 59*b*) is distinctly less than that of the lower margin of the propodus, while in *G. cruentata* (Figure 59*c*) these two lengths are about equal.

3. The most striking difference, however, is in the color pattern of the two species. In the ovigerous female of *Goniopsis pelii* from Cameroon, collected in 1964 by Mrs. De Wilde-Duyfjes, the color pattern is very well preserved (Figure 59*a*). It shows as follows: The carapace is dark purple with many minute uncolored spots in the areas before the cervical groove and between the branchiocardiac grooves; a narrow area outside the branchiocardiac grooves also shows these uncolored spots. The transverse carinae of the carapace are marked by a dark line. A similar pattern is found in *G. cruentata*, but here the spots are larger and form a reticulated structure, leaving the purple color visible as small spots. The posterolateral part of the carapace in *G. pelii* is of an evenly dark purple color, except for a very conspicuous rather broad white band, which extends along the upper side of the posterolateral margin of the carapace from the third or fourth transverse ridge behind the cervical groove to the next to last ridge. A short longitudinal white streak is present in the middle of the intestinal region just before the posterior margin; this streak is continued as a row of spots on the anterior part of the abdomen.

The eyestalks are uniformly dark purple.

The chelae are creamy white with a few purple marblings on the upper surface of the palm and of the base of the dactylus. The horny tips of the fingers are dark. The purple color of the chelae is more distinct on the inner than on the outer part of the upper surface. The outer surface of the carpus is dark purple with the spines and tubercles sharply contrasting white; also the anterior margin is white. The inner surface of the carpus as well as the lower surface of the merus are uncolored. The inner and outer surfaces of the merus are dark purple with a few rounded white spots, the spots of the outer surface being larger and fewer than those of the inner. The teeth of this segment are white. The upper (posterior) surfaces of the walking legs are dark purple, except for the dactyli and the distal lobe of the propodi, which are strongly constrastingly yellowish. On the merus there are several rounded pale spots, which are absent from the other segments. The characteristic dark and pale checkered upper margin of the segments as seen in *G. cruentata* is practically absent here. The lower (= anterior) surface of the merus is pale with a distal orange spot. The lower surface of the carpus and propodus is as dark and as uniformly purple as the upper surface.

The lower surface of the thorax is dark, with

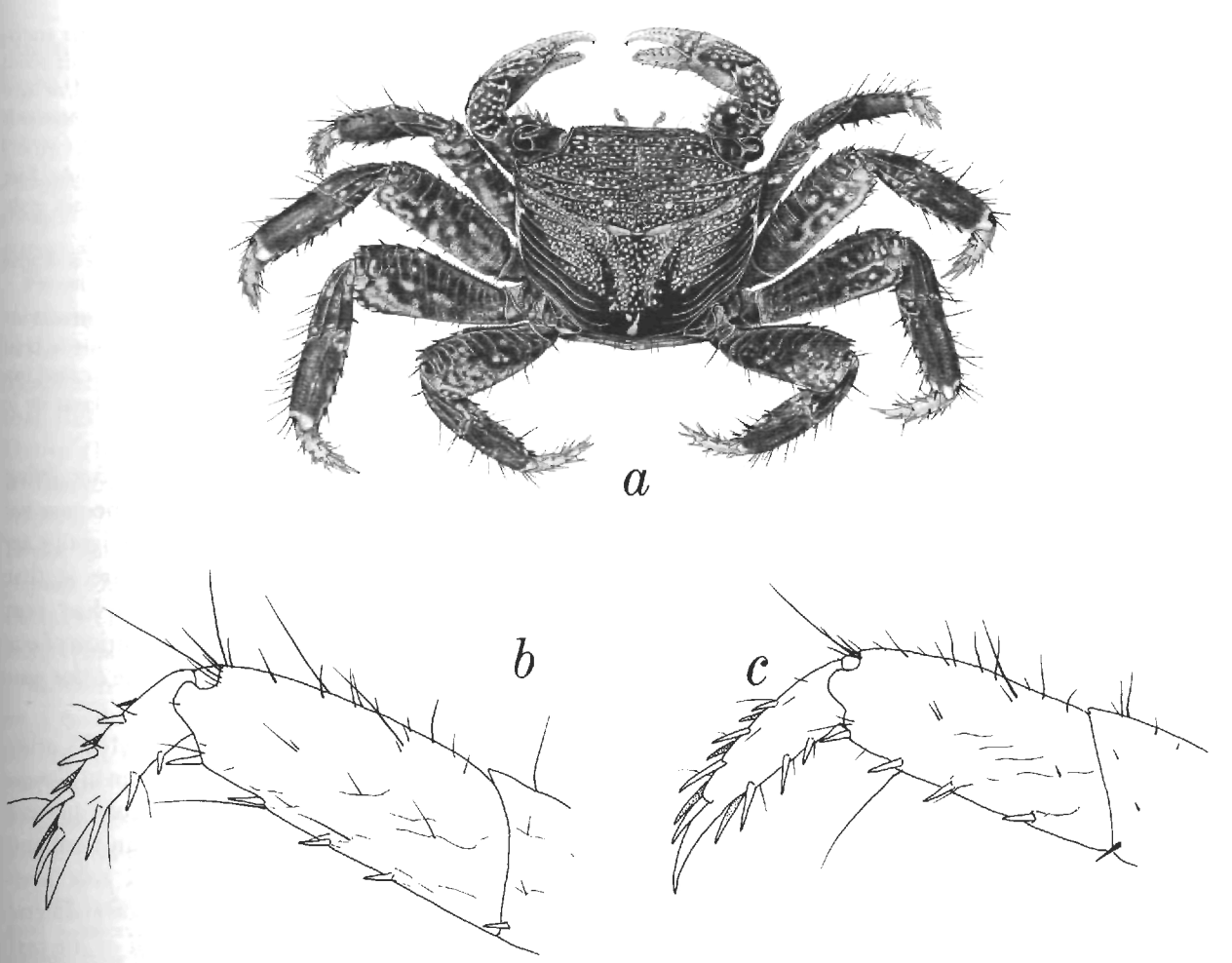

FIGURE 59.—*Goniopsis pelii* (Herklots), ovigerous female, Cameroon: *a*, dorsal view; *b*, propodus and dactylus of fifth pereiopod. *Goniopsis cruentata* (Latreille): *c*, propodus and dactylus of fifth pereiopod.

the exception of the third maxillipeds, which are pale with a dark purple spot on the carpus and in the distal part of the merus. The distal four somites of the abdomen are whitish; the basal three are pale purple.

The specimens from Nigeria in which the color is well preserved show the same color pattern, although the color itself is more reddish. Also the Liberian material agrees well with this description. In most other specimens the color has faded, but in a few some traces of the original pattern are visible, agreeing, as far as can be ascertained, with the above description.

The color pattern of the West African specimens differs strikingly from that of *G. cruentata*, of which an excellent description is provided by Chace and Hobbs (1969:161), who also provided a beautiful figure of the color pattern. In *Goniopsis cruentata* (1) the carapace is lighter, instead of having small light spots on a purple background, it shows small purple or red spots on a pale background; (2) instead of having a pale streak along the posterolateral margin, it shows in the posterolateral area a number of characteristic white spots that are surrounded by a dark purple or red ring; (3) the eyestalks are marbled with purple or red instead of being uniformly colored; (4) the carpus of the cheliped is "scarlet with

purple lines" (Chace and Hobbs, 1969:161) and does not show the bright white tubercles of *G. pelii*; (6) the merus of the chelipeds is of a uniform red color inside or orange red with darker marblings and shows on the outer surface conspicuous large pale spots surrounded by a dark red ring; (7) the pereiopods are paler than in *G. pelii*, the upper margins of merus, carpus, and propodus are blocked with dark and light color; the dactylus is not conspicuously paler than the propodus. The merus has conspicuous white spots with dark rings around them.

Only very few authors give some information on the color of the present species. Herklots (1851: 8) described the carapace as "ruber, viridi flavo marmoratus." Von Martens (1872:106) when dealing with a specimen from Liberia observed that the coloration of the carapace was more "kleinfleckig" than in his American material. De Man (1900:43) stated that the types of *Grapsus pelii* at that time had still "une belle couleur rouge jaunâtre, moins intense sur les pattes antérieures." Rathbun (1921:443) published the following color description of a living animal "A very showy crab, distinguished by its colors; carapace brownish yellow or brick-red; legs red, with spots of a darker red, extremities yellow. Chelipeds red, except the palms, which are almost white, and the fingers, which are yellow." Irvine (1947:292) described the colors as follows: "The carapace is dark reddish black. . . . The eyes are black. The claws are pale, with yellowish tips, their upper segments being of a beautiful purple colour. The legs are dark red in colour and are flat and covered with long stiff bristles."

Capart (1951:183) gave the following account "Couleurs vives, carapace brun-rouge; pattes rouges, de même que les chélipèdes, sauf les pinces, qui sont jaune clair." Unfortunately most of these authors paid more attention to the colors than to the color pattern of their animals, while the latter is far more important. The color description provided by Rossignol (1957:89) is far superior to most others. It is as follows:

Face dorsale: Carapace noire avec des points jaunes très petits et très serrés, sauf sur les régions branchiales. Une ligne médiane courte de couleur jaune sur la partie postérieure de la carapace (ligne continuée par une série de points de même couleur sur chaque segment abdominal). Une ligne blanche sur chaque bord latéral. Deux taches rouges entre la région gastrique et la région cardiaque.

Pinces: face externe jaune clair à vert amande. Face interne: violacée. Sur le bord supérieur de la main et du doigt, une série de tubercules blancs ou jaunâtres.

Pattes: brun foncé, noir, avec une tache rouge à chaque articulation. Dactyle rouge.

Face ventrale: jaunâtre. Les deux premiers segments abdominaux violacés. Mxp. 3 blancs, tranchant sur le brun sale des régions pterygostomiales. [The species is also] très facilement reconnaissable avec ses tubercules blancs sur le bord supérieur des pinces.

This description, obviously made after living specimens, agrees excellently with the one we made (quite independently from Rossignol's account, with which we were not aware at that time) after preserved specimens that had kept their coloration quite well. An illustration of our specimen is provided here to show the color pattern (Figure 59*a*).

It is interesting to note that Dana (1855, atlas, pl. 21: fig. 7) published a colored figure of *Goniopsis cruentata* from Brazil that shows a color pattern different from that of the West Indian form and in a few respects resembles that of *G. pelii* (presence of a white streak along the posterolateral margin of the carapace; pale dactyli of the pereiopods); however, it differs conspicuously from both types, and a more thorough study of Brazilian material of *Goniopsis* might yield interesting results.

Herklots (1851:8, 9, pl. 1: figs. 6, 7, 8) described the present species under two different names, viz., *Grapsus pelii* and *G. simplex*. As pointed out by De Man (1900:43, pl. 2, figs. 6, 7), *G. simplex* is based on juvenile specimens of *G. pelii*. The types of both species are still extant in the Rijksmuseum van Natuurlijke Historie, Leiden, and after examining them we can fully confirm De Man's conclusions. We use here the specific name *pelii* in preference to *simplex*, as the former is based on fully adult, the latter on juvenile specimens. The two names are of the same data, and under the Law of Priority have equal rights. In an earlier paper De Man (1879:68) synonymized

Grapsus pelii with *Goniopsis cruentata* and was followed in this by all subsequent authors. The specimens brought by Doflein (1904:129), Lenz (1910:125), and Lenz and Strunck (1914:283) to *Pachygrapsus simplex*, as Balss (1922:81) has pointed out, are not Herklots' species, but *Pachygrapsus gracilis* (De Saussure).

Forest and Guinot (1966:91) reported on a specimen of *Geograpsus lividus* from Fernando Poo in the collection of the Museu Bocage, which was identified as "*Goniograpsus cruentatus*"; it is possible that this is one of the specimens reported by Osorio (1895b:57) from that island. The same authors also showed that the material that Osorio (1892:199) reported as *Goniograpsus cruentata* from Bindá, São Tomé, actually belongs to *Grapsus grapsus*. On the other hand, they could confirm Osorio's (1889:139) identification of this species from Praia Salgada, Principe.

BIOLOGY.—The *Pillsbury* specimens were taken on a muddy bottom near the sea wall of Lagos harbor in brackish water. Most records in the literature indicate the species from a similar brackish muddy habitat. The best characterization is that given by Rathbun (1921:444):

> These crabs avoid the seashore, and on finding them in good numbers in mangrove swamps one might at first consider these their favorite habitat. However, they are not found in any of these swamps far inland for they remain near the mouth of rivers, where the salinity of the water is less than in the sea but still greater than about the creeks up-river where mangroves are still able to flourish.

Irvine (1947:292, 293) described the species as living "mainly in the wet mud underneath the tangled mass of aerial prop roots of the red mangrove (*Rhizophora*). It occupies small holes hollowed out in the mud and is often to be seen crawling on the surface." Furthermore, he stated that they "are also seen to a smaller extent in the slightly drier swamps round the banks of the lagoons, where the land is covered with a growth of white mangrove (*Avicennia nitida*)." Several other authors also reported the species from mangroves (e.g., Monod, 1927, 1956; Capart, 1951; Longhurst, 1958; Gauld, 1960; Rossignol, 1957, 1962). However, *Goniopsis pelii* also is found to be common among stones and debris on the ground (Rathbun, 1921:444; Uschakov, 1970:443), and Sourie (1954a:84, 293) mentioned that near Dakar the species lives "dans les anfractuosités des maçonneries; abondant au voisinage des mangroves," and "commun sur les falaises" near Conakry. Pauly (1975:57) noted that it was not common near the mouth of the Sakumo Lagoon, Ghana.

This species has been reported to live in burrows that it makes in the mud of mangrove areas. It is commonly seen climbing on the aerial roots of mangrove trees and also on slender vertical stems, up to 5 feet [1.5 m] over the surface (Rathbun, 1921). Irvine (1947:293) described this as follows:

> It is often seen climbing up an aerial root of the red mangrove with four legs on either side of it. The claws are kept underneath as it climbs, and are used as legs, working alternately in pushing the animal up the aerial roots. When pursued it can climb rapidly, and if closely pressed it often drops into the water and escapes along submerged roots.

They are very agile and when disturbed seek shelter between mangrove roots, or under stones and debris (Rathbun, 1921). They feed on the ground. Irvine (1947:293) also remarked that "it appears to feed on the bark of dead roots and other rotting vegetation, but may live on minute animals living in the bark. When feeding it brings its claws up to its mouth alternately in a most amusing manner."

Humes (1957) reported that this species was the host of the harpacticoid copepod *Cancrincola longiseta* Humes at several localities on the West African coast between Sierra Leone and the Congo.

Ovigerous females have been reported during April, May, July, August, and November.

The species seems to be of very little economic value. Only Irvine (1947:293) remarked that it is sold in the fish markets in Ghana.

VERNACULAR NAME.—Both Irvine (1947) and Bruce-Chwatt and Fitz-John (1951) give this species the vernacular name "Mangrove crab," a name also found on the field label of the speci-

mens from the mouth of the Junk River, Liberia, examined by us.

DISTRIBUTION.—*Goniopsis pelii* is known from the West African coast from Dakar, Senegal, in the north to Moçâmedes, Angola, in the south. Monod (1956:414, 415) listed many localities in Senegal, Guinea-Bissau, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Nigeria, Rio Muni, Gabon, and Congo, whence he had examined material of the present species. The other localities mentioned in the literature are as follows.

Senegal: Dakar (Rathbun, 1900a, 1918; Sourie, 1954a). Casamance (Sourie, 1954a).

Guinea-Bissau: No specific locality (Osorio, 1895a). Agongoon on Ilha Caravela, and Porto de Bissau on Ilha de Bissau (Vilela, 1949).

Guinea: Conakry (Capart, 1951; Sourie, 1954a; Uschakov, 1970).

Sierra Leone: No specific locality (Longhurst, 1958).

Liberia: No specific locality (Von Martens, 1872; Büttikofer, 1890; Johnston, 1906). Monrovia (Rathbun, 1918). Rock Spring and mouth of Mesurado River, near Monrovia (Rathbun, 1900a, 1918). Cape Mesurado (Balss, 1922).

Ivory Coast: Lagune Ébrié at Adiapo-doumé (Humes, 1957).

Ghana: No specific locality (Gauld, 1960). Butre (type-locality; Herklots, 1851; De Man, 1879, 1900). Baya River near Elmina (Benedict, 1893, as Ashantee; Rathbun, 1918). Accra (Irvine, 1947). Sakumo lagoon, near mouth (Pauly, 1975).

Nigeria: Lagos (Balss, 1922; Bruce-Chwatt and Fitz-John, 1951). Iru Fisheries Station near Lagos (Humes, 1957). Elechi Creek, Port Harcourt, 04°47′15″N, 06°58′45″E (Powell, 1979).

Cameroon: No specific locality (Doflein, 1900; Balss, 1922; Monod, 1927, 1928). Douala (Monod, 1927, 1956).

Rio Muni: Cabo San Juan (Nobili, 1906b). Rio Muni, 20 km up from Elobey (Balss, 1922). Islas de Elobey (Osorio, 1895a).

Fernando Poo: San Carlos and Mongola (Osorio, 1895a; see "Remarks").

Principe: No specific locality (Frade, 1950).—Praia Salgada (Osorio, 1889; Forest and Guinot, 1966).—Rio Papagaio (Forest and Guinot, 1966).

São Tomé: No specific locality (Osorio, 1888, 1889; Balss, 1922; Frade, 1950; Forest and Guinot, 1966). Praia das Conchas (Osorio, 1889). Iógoiógo (Osorio, 1890). Bindá (Osorio, 1892).

Gabon: No specific locality (Kingsley, 1880a). Cap Lopez (Balss, 1922). Port-Gentil (Roux, 1927). Ogooué (Thallwitz, 1891).

Congo: Songololo River near Pointe-Noire; Loeme River, about 18 km S of Pointe-Noire (Humes, 1957). Loango, and mouth of Songololo River (Rossignol, 1957, 1962). Djeno, near Pointe-Noire (Rossignol, 1962).

Zaire: Banana (Rathbun, 1921; Capart, 1951). Moanda (Rathbun, 1921).

Angola: No specific locality (Osorio, 1887). Santo António do Zaire (as San Antonio) (Rathbun, 1921). Lobito (Osorio, 1887). Moçâmedes (Osorio, 1895a). Between Cacuaco and Lobito-Benguela (Hartmann-Schröder and Hartmann, 1974).

Genus *Grapsus* Lamarck, 1801

Grapsus Lamarck, 1801:150 [type-species: *Cancer grapsus* Linnaeus, 1758, by tautonomy; gender: masculine].

**Grapsus grapsus* (Linnaeus, 1758)

Grapsus maculatus.—Büttikofer, 1890:465, 487.—Johnston, 1906:862.

Grapsus grapsus.—Bruce-Chwatt and Fitz-John, 1951:117.—Capart, 1951:181, fig. 70.—Monod, 1956:407, fig. 561.—Dubois, 1957:7.—Rossignol, 1957:87, 121 [key].—Gauld and Buchanan, 1959:124.—Forest and Gantès, 1960: 353.—Gauld, 1960:71.—Guinot and Ribeiro, 1962:68.—Rossignol, 1962:119.—Ribeiro, 1964:14.—Chace, 1966: 640.—Forest and Guinot, 1966:90.—Zariquiey Alvarez, 1968:422, fig. 139a [Portugal].—Kensley, 1970:181.—Penrith and Kensley, 1970b:246, 250, 252, 260.—Hartmann-Schröder and Hartmann, 1974:24.

SYNONYMS.—*Grapsus pictus* Latreille, 1803; *Grapsus maculatus* H. Milne Edwards, 1853; *Grapsus webbi* H. Milne Edwards, 1853; *Grapsus pictus ocellatus* Studer, 1883; *Cancer jumpibus* Swire, 1938.

MATERIAL EXAMINED.—*Pillsbury Material:* Fernando Poo: Sta 258, shore, 8♂, 3♀, 3 juv (W).

Annobon: Sta 271, shore, 3♂, 2♀, 5 juv (L). Sta 273, shore, 2♂, 3 juv (L). Sta 281, shore, 1 cast (L).

Other Material: Azores: No specific locality, W. Trelease, 3♂, 3♀ ov (W). Near harbor of Ilha do Corvo, 4 Jun 1976, W. Backhuys, 6 spec (L). Ponta Delgada, Ilha de São Miguel, 31 Aug 1949, G. J. Jacobs, 1♂ (W). Horta, Ilha do Faial, U. S. Exploring Expedition, 1♀ (W). Pim Bay, Horta, Ilha do Faial, L. Dexter, 1♀ (W).

Senegal: Dakar, in tide pool, 12 Feb 1969, D. E. Harvey, 1♂, 2♀ ov (W). Pointe des Almadies near Dakar, among rocks, 0–0.5 m deep, 9 Jun 1964, F. M. Bayer, R. B. Manning, and L. B. Holthuis, 1♂ (L).

Liberia: No specific locality, 1882, J. Büttikofer, 1♂ (L). Buchanan, on rocks in surf, 24 Aug 1967, T. C. Rutherford, 2♂, 7♀ (1 ov) (W).

Ghana: Virgins Pool, Takoradi, 27–29 Jul 1961, Bane and Richards, 4♂, 3♀ (1 ov) (W).

Cameroon: Kribi, common on rocky boulders, below and above low tide line, very fast, 8 Mar and 6 Aug 1964, B. de Wilde-Duyfjes, 1♀, 1 juv (L).

Zaire: Banana, mouth of the Congo River, Jul 1915, H. Lang, American Museum Congo Expedition, 2♂, 1♀ ov (W).

DESCRIPTION.—Capart, 1951:181; Chace and Hobbs, 1969:163.

Figures: Capart, 1951, fig. 70; Monod, 1956, fig. 561; Chace and Hobbs, 1969, figs. 50, 52g–i.

Male Pleopod: Chace and Hobbs, 1969, fig. 52g–i (West Indies).

MEASUREMENTS.—The carapace width of the examined males ranged between 16 and 70 mm, that of the non-ovigerous females between 23 and 43 mm, that of the ovigerous females between 32 and 71 mm, and that of the juveniles between 5 and 14 mm.

BIOLOGY.—The species can be found on rocks in the surf- or splash-zone. A good description of its habitat is given by Chace and Hobbs (1969: 165, 166).

The species is very agile and exceedingly difficult to catch in the daytime; at night it can be approached far easier. See also Chace and Hobbs (1969:166). Off West Africa ovigerous females have been collected in February, May, July, and August (Guinot and Ribeiro, 1962; Ribeiro, 1964; present paper).

DISTRIBUTION.—The species has a wide range in the tropical Atlantic and East Pacific regions. In the East Atlantic it is found from the Azores and Morocco to South-West Africa; there is a single record from Setubal, Portugal (Osorio, 1905), but this needs confirmation. Monod (1956) listed the West African records, to which the following can now be added.

Morocco: Temara, S of Rabat (Forest and Gantès, 1960).

Cape Verde Islands: Baía de Monte Trigo, Santo Antão; Matiota, Baía da Fateixa, and Baía da Calheta, São Vicente; Baía da Murdeira and Pedra Lume, Sal; Baía do Tarrafal, São Tiago; and Ponta Rodrigo, Boavista (all Guinot and Ribeiro, 1962; Ribeiro, 1964).

Liberia: No specific locality (Büttikofer, 1890; Johnston, 1906).

Ghana: No specific locality (Gauld, 1960). Teshi, 8 mi [13 km] E of Accra (Gauld and Buchanan, 1959). Takoradi and Tema harbors (Gauld, 1960).

Nigeria: Lagos (Bruce-Chwatt and Fitz-John, 1951).

Principe: Praia Ponta da Mina (Forest and Guinot, 1966).

São Tomé: Praia Pantufo, Praia Melão, Ilhéu das Cabras, Bindá, and Ilhéu Gago Coutinho (as Ilot das Rollas) (Forest and Guinot, 1966).

Annobon: San Antonio (Forest and Guinot, 1966).

Congo: Djeno (Rossignol, 1957, 1962). Baie de Loango and Pointe-Noire (Rossignol, 1962).

Zaire: No specific locality (as Belgian Congo) (Dubois, 1957).

Angola: Baía de Luanda; Lobito; Baía Farta, Baía da Caota, and Ponta da Caruíta, Benguela; Baía de Santa Marta; and Praia Amélia, Moçâmedes (all Guinot and Ribeiro, 1962). Near Moçâmedes (Hartmann-Schröder and Hartmann, 1974).

South-West Africa: Rocky Point, 18°59′S, 12°29′E (Kensley, 1970; Penrith and Kensley, 1970b). Möwe Point, 19°-23′S, 12°42′E (Kensley, 1970).

Saint Helena: several localities (Chace, 1966).

Genus *Pachygrapsus* Randall, 1840

Pachygrapsus Randall, 1840:126 [type-species: *Pachygrapsus crassipes* Randall, 1840, by selection by Kingsley, 1880a: 198; gender: masculine; name 1638 on *Official List*].

Goniograpsus Dana, 1851c:247, 249 [type species: *Goniograpsus innotatus* Dana, 1851, a subjective junior synonym of *Pachygrapsus transversus* (Gibbes, 1850), by present selection; gender: masculine].

**Pachygrapsus gracilis* (De Saussure, 1858)

Pachygrapsus gracilis.—Frade, 1950:11, 26.—Capart, 1951: 187, fig. 74, pl. 3: fig. 19.—Monod, 1956:419, figs. 569, 571, 574–577.—Rossignol, 1957:89, 122 [key].—Gauld, 1960:71.—Guinot and Ribeiro, 1962:71.—Rossignol, 1962:120.—Forest and Guinot, 1966:92.—Uschakov, 1970:443, 444, 445.—Powell, 1979:127.

Pachygrapsus "africanus".—Hartmann-Schröder and Hartmann, 1974:19 [error for *P. gracilis*].

SYNONYM.—*Grapsus guadulpensis* Desbonne and Schramm, 1867.

MATERIAL EXAMINED.—*Pillsbury Material:* Nigeria: Sta 1, Lagos harbor, shore, 15♂, 17♀ (8 ov) (L). Sta 227, Lagos harbor, shore, 3♂, 2♀ (W).

Other Material: Liberia: No specific locality, 13 Mar 1953, G. C. Miller, 1♂, 2♀ (W). Freeport area, Monrovia, oyster cultch, 12 Mar 1953, G. C. Miller, 3♂, 8♀ (4 ov) (W).

Ghana: Virgins Pool, Takoradi, near sports club, 24 Jul 1961, Bane and Richards, 1♀ (W).

Dahomey: Cotonou, Point XI Lagune, 8 Apr 1964, H. Hoestlandt, 1♀ ov (L).

Nigeria: Ogudu River, 8 Aug 1926, A. S. Pearse, 2♀ (W). Lagos, harbor, 18 Jul 1963, A. R. Longhurst, 1♂ (L). W of Forcados, near confluence of Odimodi Creek and Forcados River, 05°22′N, 05°26′E, 28 Feb 1976, C. B. Powell, 1♂, 1♀ (L). Niger delta between Brass and Port Harcourt, May–Aug 1960, H. J. G. Beets, 3♂, 3♀ (2 ov), 2 juv (L).

Gabon: Port-Gentil, J. H. Logemann, 1♀ (L).

Zaire: Banana, mouth of Congo River, shore, under and between stones, somewhat nocturnal, Jul 1915, H. Lang, American Museum Congo Expedition, 20♂, 17♀ (7 ov) (W).

DESCRIPTION.—Capart, 1951:187; Chace and Hobbs, 1969:167.

Figures: Capart, 1951, fig. 74; Monod, 1956, figs. 569, 571; Chace and Hobbs, 1969, fig. 51.

Male Pleopod: Capart, 1951, pl. 3: fig. 19 (Zaire); Monod, 1956, figs. 574–577 (Ivory Coast); Chace, 1966, fig. 11b (West Indies); Chace and Hobbs, 1969, fig. 52*j* (West Indies).

Color: "Variable. Carapace allant du brun verdâtre au brun-noir. Tous nos examplaires ont les pinces jaune sale" (Rossignol, 1957:89).

BIOLOGY.—This is a littoral species found among and under stones, pieces of wood, etc. Gauld (1960:71) reported it to be "not uncommon intertidally among mangroves and near river mouths."

Ovigerous females have been observed in Africa in all months between December and May, in July, and in September.

DISTRIBUTION.—This species inhabits the tropical Atlantic. Off West Africa it is known from Senegal to Angola; it is remarkable that it has not been reported from the Cape Verde Islands. Monod (1956) listed the localities known at that time, to which the following can now be added.

Guinea: Conakry (Uschakov, 1970).

Ghana: No specific locality (Gauld, 1960).

Nigeria: Elechi Creek, Port Harcourt, 04°47′15″N, 06° 58′45″E (Powell, 1979).

Principe: Rio Papagaio (Forest and Guinot, 1966).

Congo: Loango and Djeno (Rossignol, 1957, 1962). Pointe-Noire (Rossignol, 1962).

Zaire: Banana (Frade, 1950).

Angola: Baía de Luanda and Baía dos Tigres (Guinot and Ribeiro, 1962). Between Cacuaco and Lobito-Benguela (Hartmann-Schröder and Hartmann, 1974).

**Pachygrapsus transversus* (Gibbes, 1850)

Leptograpsus rugulosus.—Hilgendorf, 1879:808.

Pachygrapsus transversus.—Capart, 1951:186, fig. 73, pl. 3: fig. 20.—Monod, 1956:415, figs. 568, 570, 572, 573.—Rossignol, 1957:87, 121 [key], fig. 5.—Gauld and Buchanan, 1959:126.—Forest and Gantès, 1960:353.—Gauld, 1960:71.—Bassindale, 1961:491, fig. 5.—Guinot and Ribeiro, 1962:69.—Rossignol, 1962:120.—Bott, 1964: 30.—Ribeiro, 1964:16.—Forest and Guinot, 1966:91.—Zariquiey Alvarez, 1968:425, fig. 140c [Spain].—Christiansen, 1969:92, fig. 38, map 31 [introduced in Copenhagen harbor].—Uschakov, 1970:441, 443, 444, 446, 455.

Pachygrapsus Transversus.—Rossignol, 1957:133, pl. 2: fig. 3.

SYNONYMS.—*Goniograpsus innotatus* Dana, 1851; *Leptograpsus rugulosus* H. Milne Edwards, 1853; *Metopograpsus dubius* DeSaussure, 1858; *Metopograpsus miniatus* De Saussure, 1858; *Grapsus declivifrons* Heller, 1862; *Pachygrapsus intermedius* Heller, 1865; *Pachygrapsus advena* Catta, 1876.

MATERIAL EXAMINED.—*Pillsbury Material:* Nigeria: Sta 316, Lagos, shore, 1 soft ♀ (L).

Fernando Poo: Sta 257, shore, 3♂, 1♀ (L). Sta 258, shore, 28♂, 28♀ (4 ov), 32 juv (W).

Annobon: Sta 271, shore, 16♂, 9♀, 26 juv (L, W). Sta 273, shore, 4♂, 4♀, 3 juv (L).

Other Material: Canary Islands: Isla de Gran Canaria, 23 Oct 1905, 23 Jun 1916, P. Buitendijk, 1♂, 2♀ (L). Puerto de Orotava, Isla de Tenerife, Mar–Apr 1947, C. O. van Regteren Altena, 1♀ (L).

Morocco: Casablanca, 33°35′N, 07°35′W, intertidal zone, rocky littoral, 31 Mar 1976, *Onversaagd* Sta 158, 3♂, 1 juv (L).

Senegal: Dakar, littoral zone, 2 Aug 1966, D. E. Harvey, 3♂, 6♀ (3 ov), 1 juv (W). Pointe des Almadies near Dakar, under stones in littoral zone, 0–0.5 m deep, 9 Jun 1964, F. M. Bayer, R. B. Manning and L. B. Holthuis, 5 specimens (L). Soumb-Dioun, Dakar, under stones, 0–0.5 m deep, 9 Jun 1964, F. M. Bayer, R. B. Manning, and L. B. Holthuis, 4 specimens (L).

Liberia: Freeport area, Monrovia, oyster cultch, 13 Mar 1953, G. C. Miller, 2♂, 3♀, 1 juv (W).

Nigeria: West mole, Lagos, 16 Jun 1963, A. R. Longhurst, 1♂ (L).

Cameroon: Kribi, in ship-worm burrows in palm trunk on the beach in spray zone, 10 Mar 1964, B. de Wilde-Duyfjes, 2♀ ov (L). Kribi, on alga covered boulder, exposed at low tide, 6 Aug 1964, B. de Wilde-Duyfjes, 1♂, 1♀ ov (L). Kribi, among vegetation on rocks in littoral zone, 8 Mar 1964, B. de Wilde-Duyfjes, 5♂, 9♀ (4 ov) (L).

Zaire: Banana, mouth of Congo River, under and among

stones on river shore, 15 Jul 1915, H. Lang, American Museum Congo Expedition, 10♂, 8♀ (1 ov) (W).

Angola: Luanda, 21 Sep 1915, H. Lang, American Museum Congo Expedition, 1♀ (W). Lobito, 1899, P. Kamerman, 4♂, 3♀ (L).

DESCRIPTION.—Capart, 1951:186; Chace and Hobbs, 1969:169.

Figures: Capart, 1951, fig. 73; Monod, 1956, figs. 568, 570.

Male Pleopod: Capart, 1951, pl. 3: fig. 20 (Angola); Monod, 1956, figs. 572, 573 (Sierra Leone); Chace, 1966, fig. 11h (Florida); Chace and Hobbs, 1969, fig. 52k (West Indies).

Color: Observations on color have been given by Rossignol (1957:87).

MEASUREMENTS.—The examined males have carapace widths of 7 to 14 mm, the ovigerous females 12 to 18 mm, the non-ovigerous females 8 to 11 mm, and the juveniles 3 to 5 mm.

BIOLOGY.—The species is common on rocky and stony shores in the littoral zone, found among algae, mussels etc. Gauld and Buchanan (1959) reported it from sheltered rock in the Lithothamnion zone.

Off West Africa ovigerous females have been reported in March, May through October, and December.

DISTRIBUTION.—The species inhabits both the eastern and the western tropical Atlantic region, as well as the tropical eastern Pacific. The records of the species from the Indo-West Pacific region (Australia, New Zealand, Tahiti) are either erroneous or very dubious (see Holthuis and Gottlieb, 1958:102). In West Africa the range of the species extends from Angola north (it is also known from the entire north coast of Africa and the eastern Mediterranean (Karpathos (Greece), Cyprus, S Turkey, Syria, Lebanon, Israel). Monod (1956) listed the West African localities known to him at that time, to which the following may be added.

Morocco: Sidi Bou Knadel (as Bouknadel), Temara, Mannesman, El Hank (all Forest and Gantès, 1960).

Cape Verde Islands: Matiota, Baía de Porto Grande, Baía das Gatas, and Baía da Calheta, São Vicente; Baía de Sal-Rei, Boavista; Pedra Lume, Sal; Baía do Tarrafal and Porto da Praia, São Tiago (Guinot and Ribeiro, 1962; Ribeiro, 1964).

Guinea: Conakry (Uschakov, 1970).

Ghana: No specific locality (Gauld, 1960). Dixcove, 15 mi [24 km] W of Takoradi (Gauld and Buchanan, 1959). Tenkpobo Beach, near Prampram (Bassindale, 1961).

Principe: Ilhéus dos Mosteiros and Ponta da Mina (Forest and Guinot, 1966).

São Tomé: No specific locality; W of Ponta Diogo Nunes; Ilhéu das Cabras (Forest and Guinot, 1966).

Congo: Pointe-Noire (Rossignol, 1957, 1962).

Angola: Baía de Luanda; Baía do Lobito; Baía Farta, Baía das Vacas, Morro da Macaca, Ponta da Caruíta, and Praia da Rocha, Benguela; Lucira; Baía de Santa Marta; Praia das Conchas, Moçâmedes; Baía de Moçâmedes; and Baía dos Tigres (all Guinot and Ribeiro, 1962). Lobito (Bott, 1964).

Genus *Planes* Bowdich, 1825

Planes Bowdich, 1825:xi, 15 [type-species: *Planes clypeatus* Bowdich, 1825, a subjective junior synonym of *Cancer minutus* Linnaeus, 1758, by monotypy; gender: masculine; name 353 on *Official List*].

Nautilograpsus H. Milne Edwards, 1837:89 [type-species: *Cancer minutus* Linnaeus, 1758, by monotypy; gender: masculine].

Planes cyaneus Dana, 1851

Planes cyaneus Dana, 1851e:250.

?Varuna atlantica Melliss, 1875:203.

Planes cyaneus.—Chace, 1966:656.—Crosnier, 1967:337.

SYNONYM.—*Nautilograpsus angustatus* Stimpson, 1858.

MATERIAL EXAMINED.—None.

DESCRIPTION.—Chace, 1951:67.

Figures: Chace, 1951, figs. 1b, 2b,e,h,m–o, 3i–n.

Male Pleopods: Chace, 1951, fig. 2m–o (California).

BIOLOGY.—Like *Planes minutus* this is an oceanic species found on marine turtles and floating objects; so far it does not seem to have been found on *Sargassum.* Crosnier's (1967) specimen from Gabon was taken from a buoy that had drifted off; Melliss' (1875) St. Helena specimen came from the hull of a ship, and Chace's (1966) material from the same island was taken from a buoy and from drifting kelp.

DISTRIBUTION.—Chace (1951) reported on ma-

terial of this species from the Pacific Ocean between roughly 41°N and 35°S latitudes and from the Indian Ocean; no reliable records of the species from the Atlantic Ocean were known to him. Later records showed that the species is rather common in the South Atlantic Ocean, being found there far more frequently than *P. minutus*; Juanico (1976:149) is of the opinion that it is the only species of *Planes* there (but see p. 237). Juanico reported an extensive material (28 specimens) of the species from various localities on the Uruguay coast. Chace (1966:646) examined 11 specimens from various parts of the coast of St. Helena. The only certain record of the species from the coast of tropical West Africa is the one by Crosnier (1967), who examined a female from a buoy off Gabon, 02°50′S, 08°50′E. The species has once been reported from the North Atlantic, viz., by Shirley (1974) from North Padre Island, Texas, U.S.A. The unconfirmed records of *Planes minutus* from the West coast of Africa (Gambia, Liberia, Cameroon and "Gulph of Guinea"), discussed below, might pertain to the present species.

Planes minutus (Linnaeus, 1758)

Cancer minutus Linnaeus, 1758:625.

Grapsus minutus.—Leach, 1818, in 1817–1818:414.—Monod, 1970:66.

Planes minutus.—Monod, 1956:425, fig. 583.—Christiansen, 1969:94, fig. 39, map 32 [Netherlands].

SYNONYMS.—*Cancer pusillus* Fabricius, 1775; *Grapsus pelagicus* Say, 1818; *Planes clypeatus* Bowdich, 1825; *Grapsus testudinum* Roux, 1828; *Nautilograpsus major* MacLeay, 1838; *Nautilograpsus smithii* MacLeay, 1838; *Grapsus diris* Costa, 1838–1853; *Planes linnaeana* Bell, 1845.

MATERIAL EXAMINED.—*Pillsbury Material:* None.

Other Material: Morocco: Off Cap Blanc du Nord, 33°-16′N, 09°10′W, surface, collected with hand net, 27 Mar 1976, *Onversaagd* Sta 140, 1♂ (L).

DESCRIPTION.—Chace, 1951:68.

Figures: Chace, 1951, figs. 1a, 2a,d,g,j,k, 3a–h; Monod, 1956, fig. 583.

Male Pleopod: Chace, 1951, fig. 2j,k (off New Jersey).

REMARKS.—As already pointed out by Chace (1951:68), *Cancer minutus* Linnaeus (1758:625) is a composite species; the original description, namely, is based on material of both *Planes minutus* and *P. cyaneus*. Linnaeus' description runs as follows:

> C[ancer] brachuyrus, thorace laevi integerrimo subquadrato: margine acutiusculo. *Mus.Ad.Fr.* I.*p.*85. *It.wgoth.* 137.*t.*3.*f.*1. *Kalm.iter.*2.p.143. *Sloan.jam.*2.*t.*245.*f.*1. *Osbeck.iter.* 307. [p.626:] *Habitat in Pelagi* Fuco natante, *supra aquam saepius cursitans.*

This description fits either species. The reference "*Mus.Ad.Fr.*" is to Linnaeus (1754:85), where under the name *Cancer minimus* Linnaeus gives the following description:

> CANCER *brachyurus, testa subquadrata, integerrima, margine acutiusculo.*
>
> *Cancer cantonensis. It.W-goth.*137.*t.*3.*f.*1. [p. 86:] *Cancer marinus minimus quadratus. Sloan.hist.*2.*p.*270.*t.*245.*f.*1.
>
> Habitat in INDIIS.
>
> TESTA subrotunda, quadrata, laevis margine & fronte integra. CHELAE laeves. PEDES parum compressi.

The four other references given by Linnaeus (1758) in his description are all four original observations of the species. "It.wgoth." is to Linnaeus (1747:137, pl. 3: fig. 1a,1b), who described and figured *Planes* material from Canton, China, that he received from the apothecary Lut in Göteborg. As Chace (1951:88) already indicated, this material in all probability belongs to *Planes cyaneus*.

"*Kalm.iter.*" refers to Kalm (1756, in 1753–1761 (2):143), who made observations on *Cancer minutus* obtained from floating *Sargassum* in the North Atlantic during a crossing from London to Philadelphia. Kalm's account is not very clear and it is difficult to make out whether he observed *Planes minutus* or *Portunus sayi* Gibbes, 1850.

"*Sloan.jam.*" is a reference to Sloane (1725:270, pl. 245, fig. 1), who under the name *Cancellus marinus minimus quadratus* described and figured what at present is known as *Planes minutus* from "the *Sargasso* and other Submarine Sea-Plants, on

the Northside of Jamaica." Chace (1951:81) gave this as the first reliable record of *Planes minutus*.

Finally Linnaeus' reference, "*Osbeck.iter.*," is to Osbeck (1757:307), who mentioned *Cancer minutus* from the Sargasso Sea (Gräs-Sjö) at 22°N in the Atlantic north of Ascension. Osbeck gave no morphological description of this species, but did so of *Cancer pelagicus*, which showed the latter to be *Portunus sayi* Gibbes; therefore, there can be little doubt that Osbeck's *Cancer minutus* is a *Planes*, and Chace (1951:81) also considered it as such.

LECTOTYPE.—So far as we know no lectotype has ever been selected for *Cancer minutus* L. and in order to legalize the continued use of the epithet *minutus* for the North Atlantic *Planes* species, we now select as the lectotype of Linnaeus' species the specimen from the north coast of Jamaica figured by Sloane (1725, pl. 245, fig. 1).

BIOLOGY.—Monod (1927:621) reported on four specimens found in Douala Bay near Souellaba, Cameroon, on a floating trunk of a tree (*Aucoumea* sp., family Burseraceae). The same author later (1956:426) examined eight specimens found near Cotonou, Dahomey, on floating weeds "*Fucus natans*," by which the collector doubtless meant *Sargassum*. Outside the tropical West African region the species has been reported from floating *Sargassum* weed, from marine turtles, and from pieces of wood and other floating objects; it is a true oceanic form.

DISTRIBUTION.—There are very few records of the species from West Africa. Monod (1956:425, 426) listed only four: Gambia River (Gambia), Monrovia (Liberia), Cotonou (Dahomey), and Souellaba (Cameroon). Later, Monod (1970:66) drew attention to Leach's (1818, in 1817–1818: 414) record of the species from the "Gulph of Guinea." No other West African records are known to us.

Chace (1951:80, fig. 8) indicated the specimens from Gambia, Liberia, and Cameroon as of uncertain identity, being either *Planes minutus* or *P. cyaneus* Dana; no material from these localities was seen by Chace and the data provided in the literature were insufficient to identify them with certainty. The specimens mentioned by Leach (1818, in 1817–1818) and Monod (1970) as *Grapsus minutus* cannot be identified, because too little is known about them.

Quite different is the case with the specimens from Cotonou mentioned and figured by Monod (1956:425, fig. 583). Monod based the identification of his material on Chace's (1951) revision of the genus *Planes*, in which the differences between *P. minutus* and *P. cyaneus* were extensively dealt with. Furthermore, the Cotonou specimen figured by Monod shows the slender second pereiopod indicated by Chace as characteristic for *P. minutus*, and resembles that species also in other respects, so that there is no good reason to doubt Monod's identification. It is rather difficult therefore to understand Juanico (1976:146), who tried to show that Monod's identification is not reliable by stating on this account: "Monod (1956), dispone de un material de 8 ejemplares, pero no hace ninguna referencia a haberlos analizado respecto a los parámetros que permiten distinguir una especie de otra [= *P. minutus* from *P. cyaneus*]." Juanico reached the conclusion that *P. minutus* is restricted to the North Atlantic, but did not define what he considered the line between the North and South Atlantic. Judging by the fact that he evidently considered Surinam, Pernambuco, and Dahomey to be in the South Atlantic, this line is not the equator. Therefore, we consider for now that both species of *Planes* occur in West African waters, with Monod's (1956) record of *Planes minutus* from Cotonou constituting the only reliable record of that species for the area.

Outside the tropical West African region *Planes minutus* is known with certainty only from the North Atlantic between 11° and 52°N (see also Chace, 1951, fig. 8).

Subfamily PLAGUSIINAE Dana, 1851

Genus *Percnon* Gistel, 1848

Acanthopus de Haan, 1833:5, 6 [invalid junior homonym of *Acanthopus* Klug, 1807 (Hymenoptera); a genus established without included nominal species; the first species assigned to the genus, by de Haan, 1835:29, 30, were *Plagusia*

clavimana Latreille, 1806, *Cancer planissimus* Herbst, 1804 (as a synonym of *P. clavimana*), and *Plagusia serripes* Lamarck, 1818. Type-species: *Cancer planissimus* Herbst, 1804, by selection by Rathbun, 1918:337; gender: masculine; name 465 on *Official Index*].

Percnon Gistel, 1848:viii [substitute name for *Acanthopus* de Haan, 1833; type-species: *Cancer planissimus* Herbst, 1804; gender: neuter; name 345 on *Official List*].

Leiolophus Miers, 1876:46 [substitute name for *Acanthopus* de Haan, 1833; type-species: *Cancer planissimus* Herbst, 1804; gender: masculine].

Liolophus Alcock, 1900:439 [emendation of *Leiolophus* Miers, 1876; gender: masculine].

**Percnon gibbesi* (H. Milne Edwards, 1853)

Acanthopus Gibbesi H. Milne Edwards, 1853:180.

Percnon planissimum.—Monod, 1956:453, fig. 613.—Gauld and Buchanan, 1959:128.—Forest and Gantès, 1960: 355.—Gauld, 1960:71.—Guinot and Ribeiro, 1962:72.—Ribeiro, 1964:17.—Forest and Guinot, 1966:93.—Zariquiey Alvarez, 1968:436, fig. 146a [Portugal]. [Not *Cancer planissimus* Herbst, 1804.]

Percnon gibbesi.—Chapman and Santler, 1955:375.—Figueira, 1960:11.

SYNONYM.—*Plagusia Delaunayi* De Rochebrune, 1883.

MATERIAL EXAMINED.—*Pillsbury Material:* Fernando Poo: Sta 258, shore, 1♂, 1 juv (W).

Annobon: Sta 271, shore, 3♂, 1♀, 2 juv (L).

Other Material: Madeira: No specific locality, U. S. Exploring Expedition, 1♂, 1♀ (dry) (W). Ponta de São Lourenço, SE coast, 32°44′N, 16°44′W, rocky shore with tidepools, 29 Feb 1976, *Onversaagd* Sta 16, 6 specimens (L). SE coast near Porto da Abra, 32°45′N, 16°41′W, 0–12 m, diving, 13 Mar 1976, *Onversaagd* Sta 68, 1♀ ov (L). S coast, W of harbor of Funchal, 32°38′N, 17°05′W, rocky littoral, sublittoral, with boulders, snorkeling, 24 Feb 1976, *Onversaagd* Sta 8, 1 juv (L). SE coast near Canical, 32°44′N, 16°44′W, 0–22 m, shore collecting, snorkeling, diving, 2 Mar 1976, *Onversaagd* Sta 14, 14 specimens (L); Same, 11 Mar 1976, *Onversaagd* Sta 48, 2 specimens (L).

Canary Islands: Puerto Orotava, Isla de Tenerife, shore, 10 Mar 1947, C. O. van Regteren Altena, 1♂ (L).

DESCRIPTION.—Rathbun, 1918:337; Schmitt. 1939:23, 24.

Figures: Rathbun, 1918, pl. 105; Monod, 1956, fig. 613.

MEASUREMENTS.—The carapace width of the examined specimens ranged from 6 to 30 mm; that of the ovigerous female was 30 mm.

Remarks.—Several previous authors (Monod, Forest, and Guinot) synonymized *Percnon gibbesi* with *P. planissimum* (Herbst) from the Indo-West Pacific region. However, in our opinion the two species, although closely related, differ sufficiently in the characters enumerated by Schmitt (1939: 24) to be considered distinct species.

BIOLOGY.—The species is a littoral form and is usually found on rocky shores. Off West Africa ovigerous females have been collected in February, March, April, and August (Monod, 1956; Forest and Gantès, 1960; present paper).

DISTRIBUTION.—*Percnon gibbesi* is known from both sides of the Atlantic and from California to Chile in the eastern Pacific. In the western Atlantic it ranges from Florida to Brazil, and in the eastern Atlantic from Madeira, the Azores, and Morocco to Ghana and the offshore islands of the Gulf of Guinea; a record from Portugal requires confirmation. Monod (1956) listed the West African localities known to him; to those the following can be added:

Azores: No specific locality (Chapman and Santler, 1955; Figueira, 1960).

Morocco: Lucien Saint (?), Temara, and David (Forest and Gantès, 1960).

Cape Verde Islands: Praia de Matiota, São Vicente, and Baía do Monte Trigo, São Antão (Guinot and Ribeiro, 1962; Ribeiro, 1964).

Ghana: No specific locality (Gauld, 1960). Tenkpobo (Gauld and Buchanan, 1959).

São Tomé: Praia Santa Catarina and Ilhéu das Cabras (Forest and Guinot, 1966).

Principe: Ilhéu Caroço (Forest and Guinot, 1966).

Annobon: No specific locality (Forest and Guinot, 1966).

Genus *Plagusia* Latreille, 1804

Plagusia Latreille, 1804:125 [type-species: *Cancer depressus* Fabricius, 1775, by monotypy; gender: feminine; name 1644 on *Official List*].

Philyra de Haan, 1833:5 [invalid junior homonym of *Philyra* Leach, 1817; a genus established without included species; type-species: *Cancer depressus* Fabricius, 1775, by subsequent monotypy by de Haan, 1835:31; gender: feminine].

*Plagusia depressa (Fabricius, 1775)

Plagusia depressa.—Büttikofer, 1890:487.—Johnston, 1906: 862.—Monod, 1956:455, figs. 614–617.—Rossignol, 1957: 95, 121 [key], fig. 9.—Figueira, 1960:11.—Forest and Gantès, 1960:356.—Gauld, 1960:71.—Guinot and Ribeiro, 1962:72.—Rossignol, 1962:121.—Ribeiro, 1964: 17.—Chace, 1966:647.—Forest and Guinot, 1966:93.—Hartmann-Schröder and Hartmann, 1974:24.

Plagusia squamosa.—Stimpson, 1907:122.

SYNONYMS.—*Cancer squamosus* Herbst, 1790; *Plagusia sayi* De Kay, 1844; *Plagusia gracilis* De Saussure, 1858.

MATERIAL EXAMINED.—*Pillsbury Material:* Nigeria: Sta 225, Lagos harbor, shore, 1♀ ov (W).

Annobon: Sta 271, shore, 1♂, 1♀ ov (L). Sta 273, shore, 2♀ (1 ov) (W).

Other Material: Madeira: No specific locality; U. S. Exploring Expedition, 1♂, 1♀ (W).

Liberia: No specific locality, 1882, J. Büttikofer, 1♂, 1♀ (L). No specific locality, 1890, J. Demery, 1♀ (L).

Ghana: Butre, 1840–1855, H. S. Pel, 1♀ (L). Sekondi, 1853, H. S. Pel, several specimens (L). Baya River, Elmina, 27 Nov 1889, W. H. Brown, U. S. Eclipse Expedition, 1♂ (W). Accra, 1868–1869, M. Sintenis, 2♂, 1♀ (L).

Cameroon: Kribi, among algae on rocks on a sandy beach, 11 Mar 1964, B. de Wilde-Duyfjes, 8♂, 7♀, 1 juv (L).

DESCRIPTION.—Rathbun, 1918:332; Chace and Hobbs, 1969:192.

Figures: Rathbun, 1918, fig. 154a, pl. 101; Monod, 1956, fig. 614; Rossignol, 1957, fig. 9; Chace and Hobbs, 1969, fig. 63.

Male Pleopod: Monod, 1956, figs. 615–617 (Senegal); Chace and Hobbs, 1969:190, fig. 62r–t (West Indies).

MEASUREMENTS.—The carapace width of the examined specimens varied from 15 to 42 mm, that of the ovigerous females was 28 and 32 mm.

BIOLOGY.—This is a littoral species, inhabiting rocky shores or rocks on sandy beaches. Off West Africa ovigerous females have been collected in May, August, September, October, and December.

DISTRIBUTION.—The species occurs on both sides of the Atlantic. In American waters its range extends from North Carolina (U.S.A.) to Brazil, in the eastern Atlantic from the Azores and Morocco to Angola. Monod (1956) listed the West African records of the species known to him; to these the following can be added:

Azores: Faial (Figueira, 1960).

Morocco: Temara (Forest and Gantès, 1960).

Madeira: No specific locality (Stimpson, 1907).

Cape Verde Islands: Baía das Gatas, São Vicente and Tarrafal do Monte Trigo, São Antão (Guinot and Ribeiro, 1962; Ribeiro, 1964).

Liberia: No specific locality (Büttikofer, 1890; Johnston, 1906).

Ghana: No specific locality (Gauld, 1960).

São Tomé: No specific locality (Forest and Guinot, 1966). Baía de São Miguel, and Sant'Ana (Forest and Guinot, 1966).

Congo: Djeno (Rossignol, 1957, 1962). Pointe-Noire (Rossignol, 1962).

Angola: Baía de Benguela; Baía da Caota and Ponta das Vacas, Benguela; Praia das Conchas, Moçâmedes (all Guinot and Ribeiro, 1962). Near Moçamêdes (Hartmann-Schröder and Hartmann, 1974).

Saint Helena: James Bay and Rupert's Bay (Chace, 1966).

Subfamily SESARMINAE Dana, 1851

Genus *Cyclograpsus* H. Milne Edwards, 1837

Cyclograpsus H. Milne Edwards, 1837:77 [type-species: *Cyclograpsus punctatus* H. Milne Edwards, 1837, by selection by Rathbun, 1918:325; gender: masculine].

Gnathochasmus MacLeay, 1838:65 [type-species: *Gnathochasmus barbatus* MacLeay, 1838, a subjective junior synonym of *Cyclograpsus punctatus* H. Milne Edwards, 1837, by monotypy; gender: masculine].

*Cyclograpsus integer H. Milne Edwards, 1837

Cyclograpsus integer.—Sourie, 1954a:294.—Monod, 1956:451, figs. 609–612.—Guinot and Ribeiro, 1962:71.—Rossignol, 1962:121.—Ribeiro, 1964:17.—Uschakov, 1970:443, 455 [listed].

Cyclograpsus occidentalis.—Rossignol, 1957:93, 122 [key], fig. 8.—Bott, 1964:30.

SYNONYM.—*Cyclograpsus occidentalis* A. Milne Edwards, 1878.

MATERIAL EXAMINED.—*Pillsbury Material:* Nigeria: Sta 1, Lagos harbor, shore, 11♂, 11♀ (2 ov) (L, W).

Other Material: Cape Verde Islands: Praia, São Tiago, Jul 1883, *Talisman* Expedition, don. Mus. Paris, 1♂ (L).